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OFFICE OF THE PROJECT MANAGER CHEM DEMILITARIZATION I--ETC F/G 15/2
OPERATION OF THE CHEMICAL AGENT MUNITIONS DISPOSAL SYSTEM (CAMD--ETC(U)
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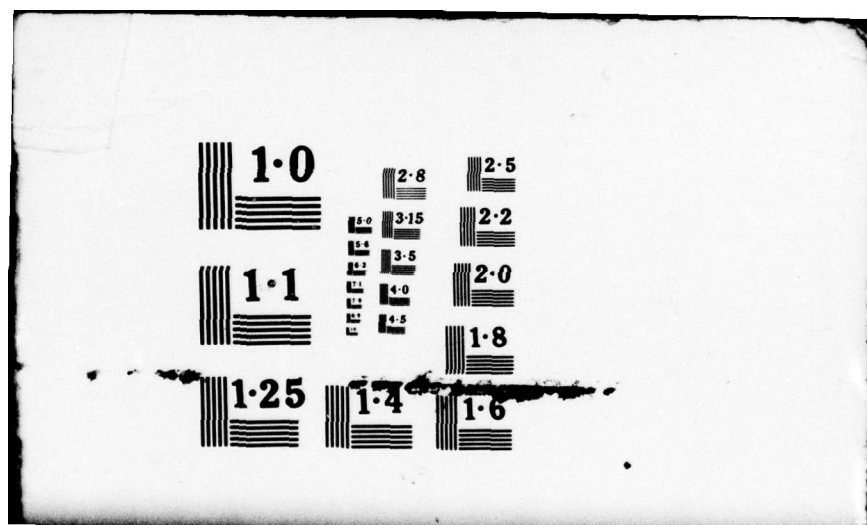
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LEVEL III

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**OPERATION OF THE
CHEMICAL AGENT MUNITIONS DISPOSAL SYSTEM
(CAMDS)
AT
TOOELE ARMY DEPOT, UTAH**

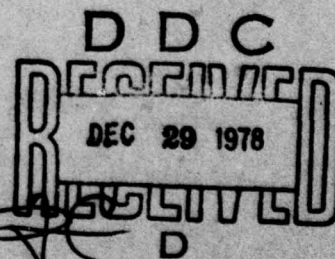
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MARCH 1977

INCLOSURE NO. 5



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EXPLOSIVE CONTAINMENT CUDGLE TESTING & RELATED DATA

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19. KEY WORDS (Continue on reverse side if necessary and identify by block number) Chemical Agent/Munition Disposal System Ultrasonic Inspection Chemical Demilitarization Tooele Army Depot, Utah Explosive Containment Cubicle Fragmentation Testing Chemical Munitions Penetration Testing		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) The Chemical Agent Munition Disposal System is a prototype facility for the large scale destruction of lethal chemical agents and munitions. This docu- ment describes tests performed in the design and acceptance of the explosive containment cubicle. X		

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LEVEL II

DEMILITARIZATION PLAN

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OPERATION
OF THE
CHEMICAL AGENT MUNITIONS DISPOSAL SYSTEM
(CAMDS)

AT
TOOELE ARMY DEPOT

MARCH 1977

INCLOSURE NO. 5

EXPLOSIVE CONTAINMENT CUBICLE (ECC)

TESTING AND RELATED DATA

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SUMMARY TEST REPORT*

CAMDS 2-1

1. Name of Test. Fragmentation Test of 8-inch Projectile.
2. Date. 13 August 1970.
3. Test Objectives. To determine the size and velocity of primary and secondary fragments resulting from the detonation of an M426 8-inch simulant-filled chemical projectile. Data obtained to be used as design parameters for an Explosive Containment Cubicle (ECC) used to house demilitarization equipment.
4. Test Procedures. A projectile was positioned on its side on a raised platform. Miscellaneous pieces of hardware were positioned along side the projectile to simulate secondary fragments of demilitarization equipment. Target barricades were positioned at pre-recorded distances from the test projectile. Three high-speed cameras were used to record the test. Velocity was determined by counting the camera film frames from time of detonation until fragments struck the target barricades.
5. Test Results. Velocity data was obtained on one primary and 31 secondary fragments that hit the target barricade and were visible on the camera film. Eight of the fragments recovered were identifiable on the camera film thus supplying weight data on eight fragments.
6. Conclusions. The test data obtained achieved the test objectives and was used in designing the ECC.

*A copy of the complete test report is available on request to Office of the Project Manager for Chemical Demilitarization and Installation Restoration, DRCPM-DRD-TM, Aberdeen Proving Ground, Md. 21010

SUMMARY TEST REPORT*

CAMDS 2-2

1. Name of Test. Fragmentation Test of 115mm Chemical Rocket.
2. Date. 25-26 August 1970.
3. Test Objectives. To determine the size and velocity of primary fragments resulting from the detonation of a 115mm Chemical Rocket. Data obtained to be used as design parameters for an Explosive Containment Cubicle (ECC) used to house demilitarization equipment.
4. Test Procedures. The test rocket was suspended four feet above ground level. Boxes 4' x 4' x 8' high containing recovery material were positioned 21 feet from the nose of the rocket and 17 feet from the sides of the rocket. Two high-speed cameras were used to record the test. Velocity was determined by counting the camera film frames from time of detonation until the fragments struck the recovery boxes and by the depth of penetration into the recovery material. The test was repeated six times.
5. Test Results. Photographic velocities were determined on five fragments. Penetration weights and velocities were determined on 177 fragments.
6. Conclusions. The test data obtained achieved the test objectives and was used in designing the ECC.

*A copy of the complete test report is available on request to Office of the Project Manager for Chemical Demilitarization and Installation Restoration, DRCPM-DRD-TM, Aberdeen Proving Ground, Md. 21010

SUMMARY TEST REPORT*

CAMDS 2-3

1. Title of Test. Penetration Tests

2. Date. 8 June to 14 Oct 1973

3. Test Performed By. Ammunition Equipment Office, Tooele Army Depot, Tooele, Utah, and Los Alamos Scientific Laboratory (LASL), Los Alamos, New Mexico.

4. Purpose of Tests. The problems of electrical, hydraulic and drain penetrations between the outside and the inside of the Explosive Containment Cubicle (ECC) were identified at early informal design reviews. The main concern was the ability of the various penetrations and connectors to withstand the acceleration forces and pressures encountered during an incident. The tests were to resolve whether the existing connector designs would be acceptable or whether others should be selected and tested.

5. Testing Procedure. The various penetrations to be tested were mounted on a 2-1/2-inch thick SA 516 Grade 70 steel chamber, 20-inches in diameter. The steel panel was attached to a standard LASL 6-ft. diameter spherical confinement vessel. Although this vessel is not exactly identical to the ECC, both vessels are sufficiently large that the initial blast impulse on the door is unaffected by the precise geometry of either vessel. The use of a confinement vessel also assured that the explosive products could not escape unless the test fittings leaked. The charge used in the first three shots consisted of 10.8 lbs. of the explosive Composition B-3. This charge was slightly larger than the 10.1 lb. charge that was requested, but the small extra amount helped compensate for the incomplete detonation which occurs in the area of the detonator for this kind of explosive, and the charge was a convenient size to obtain.

TEST 1 - To the 2-1/2-inch thick panel were connected two pairs of 101 Series DG O'Brien weld-on connectors, each pair consisting of one 68-pin connector and one 50-ohm coax connector. This type of connector has a 2,000 psi static pressure rating. One 68-pin, 50-ohm connector pair was welded in place employing O'Brien welding specifications. The other pair was mounted in the M-2 (LASL) welded configuration, which welds the plug to the test panel rather than the connector. Also mounted on the panel were two pilot-operated hydraulic check valves and associated 1/2" hydraulic tubing with 37° flared tube fitting.

*A copy of the complete test report is available on request to Office of the Project Manager for Chemical Demilitarization and Installation Restoration, DRCPM-DRD-TM, Aberdeen Proving Ground, Md. 21010

After detonation, the vessel was pressurized with freon to 97 psi gauge pressure and the freon leak rate measured roughly 5 cu. in./sec. of atmospheric pressure freon. The 37° hydraulic fittings also leaked. The total leakage rate from the eleven 37° fittings was estimated at .06 cu. in./min. A summary of the results is presented in Table I.

TEST 2 - Basically, test 2 was identical to test 1. However, the 37° hydraulic tube fittings were replaced with "Lenz" brand fittings which employ both a teflon gasket and o-ring seal. A summary of the results for test 2 is shown in Table II.

TEST 3 - Test No. 3 was designed to test the "CONAX" electrical feed-throughs and the decon and agent drain lines and fittings. The test followed essentially the same procedure as test 1 and 2, except that the test panel was replaced with a new one, on which the following components were mounted:

- a. 1-1/4", schedule 80 pipe welded to a mounting flange.
- b. 2", schedule 80 pipe threaded into a mounting flange.
- c. One "CONAX" 37-pin, 10,000 psi static rated connector.
- d. One "CONAX" 75-ohm, coax, 10,000 psi static rated connector.

Both the 1-1/4" and 2" piping assemblies were filled with water just prior to the test. This was done to simulate drain line usage during an incident.

Because the drain components were also included in this test, they were subjected to a blast impulse greater than what they would experience in the actual ECC. The drain pipes are in a region of the ECC end panel subject to a lesser blast impulse than the electrical feed-throughs.

The "CONAX" feed-throughs all leaked as a result of cracking of the ceramic potting material. The threaded 2" pipe sheared at the threads and blew off. The pressures recorded indicate that the transducers were probably partially shielded from the full blast peak pressure. The accelerometers recorded quite high accelerations during vessel ringing. A summary of test 3 is shown in Table III.

TEST 4 - Test 4 was performed to test the modified 2" drain pipe in the configuration and environment they would experience in the ECC. (In this test, the 2" threaded pipe flange was replaced with one in which the pipe was welded onto the flange.) Since it was not possible to offset the standard charge the proper distance from the drain pipes (as in tests 1, 2 and 3) and have it still inside the confinement vessel, the charge was scaled down and moved closer. In scaling, the ratio of the charge mass to the cube of the distance was kept constant to duplicate the pressure which the drain pipe region will face in the full scale ECC. As in test 3, the drain pipes were filled with water. The summary of this test is listed in Table IV.

The drain pipes did not leak. A pressure transducer furnished by Tooele, which was mounted in the end of one of the pipes, leaked, but this was not a part of the actual drain system to be used in the ECC. The unshielded pressure pulse was observed to be 780 psi. The initial acceleration from the accelerometer records was again not decipherable and the total charge was so small that no large vessel ringing occurred. The capacitor gauge was not available for use on this experiment. In this shot, however, a special measurement of the residual pressure was made. The observed gauge residual pressure was 12 psi. Since the ECC has an internal volume about 17 times that of the confinement vessel used, this situation is equivalent to exploding 22.6 lb. of Composition B-3 in the ECC. Thus the residual pressure for 10.1 lb. of Composition B-3 detonated in the ECC must be less than 12 psi. In fact, the previous LASL estimate of 9 psi is probably quite reasonable.

6. SUMMARY OF THE FOUR TESTS:

The results of the first two tests indicate that the leak problem with the hydraulic system has been solved. The leak problem with the electrical feed-throughs can evidently be circumvented by using an O'Brien feed-through and following LASL recommended mounting procedures. The general blast environment to which fittings in this region of the ECC end wall are subjected includes pressures of about 3000 psi and accelerations as high as 8500 g's. The accelerations of this magnitude which persist for only a short time do not cause any serious problem since it is only the total impulse which is important. The results of the third test indicate that the CONAX feed-throughs will not withstand the blast expected in the ECC. The last test indicates that welded and supported drain pipes will withstand the potential blast inside the ECC.

TABLE I

The First Tooele Test Shot

M-2 Designation: NW-1512-T

Date Fired: 8 June 1973

Charge: 10.8 lb Comp. B-3, 36-in. from door, offset 18-in.

Purpose: Test of the following in blast environment appropriate to their position in the ECC.

- (a) Hydraulic lines and systems
- (b) Model 110 O'Brien 50 ohm coax electrical feed-through in factory recommended mounting
- (c) Two Model 101 O'Brien 68 pin electrical feed-throughs
 - 1. factory recommended mounting
 - 2. LASL recommended mounting
- (d) Two Model 101 O'Brien 8 pin electrical feed-throughs
 - 1. factory recommended mounting
 - 2. LASL recommended mounting

Results: Items (a) leaked. Items (c) and (d) with factory recommended mounting leaked.

Pressure Transducer Data:

Pressure Transducer Number:	SN-347	SN-522
Initial Pressure Pulse Peak (psi)	2970	3040
Arrival Time (msec)	0.4	0.4

Accelerometer Data:

Accelerometer Number:	SN-1	SN-2
Time of Initial Acceleration (msec)	0.35	0.30
Maximum Acceleration During Ringing (g's)	17,000*	18,000*
Time (msec)	3.3	2.35

*Accelerometer was loose after shot

TABLE II

The Second Tooole Test Shot

M-2 Designation: NW-1514-T

Date Fired: 23 August 1973

Charge: Same as Shot Number One

Purpose: Test of modified hydraulic lines and system in a blast environment appropriate to their position in the ECC.

Results: No leaks in the hydraulics.

Pressure Transducer Data

Pressure Transducer Number:	SN-347	SN-318
Initial Pressure Pulse Peak (psi)	2440	1150
Time (msec)	0.5	0.4

Accelerometer Data:

Accelerometer Number:	SN-1	SN-2
Time of Initial Acceleration (msec)	0.44	0.4
Maximum Acceleration During Ringing (g's)	9,000	10,000*
Time (msec)	0.75	0.75

*Accelerometer loose after shot

Initial Accelerations (g's)	8500
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TABLE III

The Third Tooole Test Shot

M-2 Designation: NW-1524-T

Date Fired: 13 September 1973

Charge: Same as Shot Number One

Purpose: Test of Conax electrical feed-throughs provided by Tooole in a blast environment appropriate to their position in the ECC, and also a test of threaded drain pipes exposed to this same blast.

Results: Conax feed-throughs leaked; drain pipes sheared threads.

Pressure Transducer Data:

Pressure Transducer Number:	SN-347	SN-368
Initial Pressure Pulse Peak (psi)	1200	1670
Time (msec)	0.30	0.28

Accelerometer Data:

Accelerometer Number:	SN-1	SN-2
Time of Initial Acceleration (msec)	0.30	0.35
Maximum Acceleration During Ringing (g's)	13,000	13,000
Time (msec)	0.36	0.65

Capacitor Data: Gauge Failure

TABLE IV

The Fourth Toccole Test Shot

M-2 Designation: NW-1530-T

Date Fired: 14 October 1973

Charge: 1.33 lb Comp. B-3, 18-5/16-in. from door, offset 25-3/16-in.

Purpose: Test of water filled drain pipes in blast environment appropriate to their position in the ECC.

Results: Drain pipes did not leak.

Pressure Transducer Data:

Pressure Transducer Number:	SN-347	SN-368
Initial Pressure Pulse Peak (psi)	780	375
Time (msec)	--	--
Residual Pressure (psi)	12	

Accelerometer Data: Not decipherable

Capacitor Data: Not available for this shot.

SUMMARY TEST REPORT*

CAMDS 2-4

1. Name of Test. Flange Bolt Gasket Test.
2. Date. Not dated.
3. Test Objectives. The end panels of the Explosive Containment Cubicle (ECC) are designed to be fastened to the cylindrical body by a double row of circumferential flange bolts. In the event of an explosive incident, the inner circle of flange bolts will be directly exposed to the internal blast pressure thus providing a possible path for agent leakage. The head of each bolt is gasketed with a soft steel gasket washer to prevent leakage. The purpose of this test is to evaluate the sealing capabilities of the steel washer gasket.
4. Test Procedures.
 - a. Mount a bolt, with a steel washer gasket under the bolt head, into the same diameter hole and thickness of material as stated in the ECC Design Specifications.
 - b. Tension the bolt to 85,000 pounds with standard hydraulic-operated tensile testing apparatus.
 - c. With the bolt under tension, torque the bolt to 8-10 ft lbs.
 - d. Remove the tension from the bolt to allow the gasket to plastically deform.
 - e. Repeat steps b, c and d.
 - f. Cap each end of the pre-tensioned bolt assembly with a leak-proof chamber.
 - g. Pressurize the nut end of the assembly with 80 psi Helium.
 - h. Monitor the head end of the bolt with a helium mass spectograph leak detector for 30 minutes.
5. Test Results. No leakage was detected.
6. Conclusions. Design specifications for attaching end panels to the ECC are adequate.

*A copy of the complete test report is available on request to Office of the Project Manager for Chemical Demilitarization and Installation Restoration, DRCPM-DRD-TM, Aberdeen Proving Ground, Md., 21010

SUMMARY TEST REPORT*

CAMDS 2-5

1. Name of Test. Dynamic Tear Test.
2. Date. 1 August 1973.
3. Test Objectives. To determine the effect of temperature variations on the structural strength of the steel to be used in the fabrication of the Explosive Containment Cubicle (ECC).
4. Test Procedures. Tests were performed under contract by Southwest Research Institute, San Antonio, Texas. Drop-weight nil ductility transition temperature of the test steel was defined using ASTM E 2-8 Test procedures. Dynamic Tear Tests were conducted per Naval Research Laboratory Report No. 7159.
5. Test Results. The ECC should not be used to demilitarize 8-inch projectiles or M55 Rockets when the ECC skin temperature is below 70° F.
6. Conclusions.
 - a. A heated building would be constructed to house the ECC to maintain the ECC to at least 70° F.
 - b. Dynamic Tear Tests will be conducted on all steel supplied for fabrication of ECCs.

*A copy of the complete test report is available on request to Office of the Project Manager for Chemical Demilitarization and Installation Restoration, DRCFM-DRD-TM

SUMMARY TEST REPORT*

CAMDS 2-6

1. Name of Test. Door Seal Test.
2. Date. January 1972.
3. Test Objective. To determine if the Explosive Containment Cubicle (ECC) door seals, designed as the result of an evaluation made by Utah Research and Development Co., would perform satisfactorily under simulated operating conditions.
4. Test Procedures. Five tests were conducted on four types of neoprene seals using a scale model of the ECC. The types of seals tested were Quad-Lobe shaped durometer 50, 60, and 75 and a mound-shaped durometer 60. The five tests were:
 - a. Linear Compression Tests to determine the force required to effect a seal with each type of seal.
 - b. Cyclic Tests. The door was opened and closed 24,000 times with test chamber at 70-75°F and 800 times at 0°F.
 - c. Static Pressure Tests. Seal leakage rate was checked with the door closed and the chamber pressurized at 100 psi. The door was then deflected 3/16 of an inch 40 times.
 - d. Explosive Dynamic Tests. An acceptor chamber was attached to the scale model and pressurized at 25 psi air-helium mixture. An explosive charge was detonated inside the chamber. The acceptor chamber was monitored with a helium mass spectograph.
5. Test Results.
 - a. Linear Compression Tests. The force (lb/inch) required for each type of seal was:
 - (1) Quad-Lobe durometer 50 = 157
 - (2) Quad-Lobe durometer 50 = 123
 - (3) Mound-shape durometer 60 = 230
 - (4) Quad-Lobe durometer 75 = 341

*A copy of the complete test report is available on request to Office of the Project Manager for Chemical Demilitarization and Installation Restoration, DRCPM-DRD-RM, Aberdeen Proving Ground, Md. 21010

b. Cyclic Tests. The mound-shaped seal started breaking down after 6000 cycles. All Quad-Lobe seals showed no wear after 24,000 cycles. Compression set after the cold cyclic test was:

- (1) Quad-Lobe durometer 50 = 1/16 inch
- (2) Quad-Lobe durometer 60 = 5/16 inch
- (3) Mound-shape durometer 60 = 3/16 inch
- (4) Quad-Lobe durometer 75 = 7/32 inch

c. Static Pressure Tests. No leakage on any of the seals.

d. Dynamic Pressure Tests. No leakage on any of the seals.

e. Explosive Dynamic Tests. No leakage on any of the seals.

6. Conclusions. The Quad-Lobe durometer 60 Seal was selected for use on the ECC doors.

SUMMARY TEST REPORT*

CAMDS 2-7

1. Name of Test. Ultrasonic Inspection of Steel Plate.
2. Date. March 1972.
3. Test Objectives. To check the quality of the welds on the Explosive Containment Cubicle (ECC) at start of fabrication process.
4. Test Procedures. The ultrasonic inspection was performed by Pittsburgh Test Laboratory in accordance with ASTM A 578, Acceptance Standard Level.
5. Test Results. Defective welds were located as well as defective sections of steel adjacent to the welds. NOTE: (The welds and defective steel sections were repaired and re-tested. No defects were apparent.)
6. Conclusions.
 - a. Microscopic inspections would be conducted on the welds to confirm these test results.
 - b. The ultrasonic tests would be conducted on 100% of the surface area of the steel to be used to fabricate the ECC.

*A copy of the complete test report is available on request to Office of the Project Manager for Chemical Demilitarization and Installation Restoration, DRCFM-DRD-TM, Aberdeen Proving Ground, Md. 21010

SUMMARY TEST REPORT*

CAMDS 2-8

1. Name of Test. Microscopic Inspection of Welds.
2. Date. April 1972.
3. Test Objectives. To check the quality of welds on the Explosive Containment Cubicle (ECC) and confirm the results of the ultrasonic inspections previously performed.
4. Test Procedures. Tests were performed by IIT Research Institute (IITRI), Chicago, Illinois. Test welds were sawed in two, ground smooth, then visually inspected through a microscope.
5. Test Results. Defective welds were found.
6. Conclusions. Welding procedures and specifications for the ECC were inadequate. IITRI would revise the specifications to include pre-heating of the steel, weld preparations, weld procedures and weld sequences. All welds are to be ultrasonic and radiographic inspected.

*A copy of the complete test report is available on request to Office of the Project Manager for Chemical Demilitarization and Installation Restoration, DRCPM-DRD-TM, Aberdeen Proving Ground, Md. 21010

SUMMARY TEST REPORT*

CAMDS 2-9

1. Name of Test. ECC Fragmentation Test.
2. Date. August 1972.
3. Test Objective. To determine if the Explosive Containment Cubicle (ECC) will retain all the fragments resulting from a detonation inside of the cubicle.
4. Test Procedures. Simulant-filled munitions were detonated in an 8 ft section of an ECC built to design specifications. The test was repeated four times, twice with an 8-inch projectile and twice with a 155mm projectile. Each munition contained a 25% overcharge of Composition C explosive. Each munition contained a salt solution to simulate the specific gravity of GB nerve agent. Each munition was suspended at the center of the ECC section.
5. Test Results. The ECC section completely retained all fragments of the test projectiles except those which exited the open ends of the ECC section. The deepest penetration into the ECC wall was 5/16-inch.
6. Conclusions. The design of the ECC is adequate to retain fragments resulting from an explosive incident.

*A copy of the complete test report is available on request to Office of the Project Manager for Chemical Demilitarization and Installation Restoration, DRCPM-DRD-TM, Aberdeen Proving Ground 21010

SUMMARY TEST PLAN*

CAMDS 2-10

1. Name of Test. Pilot Tests on Door Seals.
2. Date. 1975.
3. Test Objective. Determine design integrity of the Explosive Containment Cubicle (ECC) door operating mechanisms. Confirm results of CAMDS Test 2-6 Door Seal Test.
4. Test Procedures. Fabricate mock-up model of ECC item in door with operating and control mechanisms identical to those to be used on the ECC. Cycle the door as long as necessary to derive conclusions regarding the design integrity.

*A copy of the complete test plan is available on request to Office of the Project Manager for Chemical Demilitarization and Installation Restoration, DRCPM-DRD-TM, Aberdeen Proving Ground 21010

SUMMARY TEST PLAN*

CAMDS 2-11

1. Name of Test. Hydrostatic Test No. 1.
2. Date. November 1975.
3. Test Objective. To assure the Explosive Containment Cubicle (ECC), after fabrication and assembly, does not leak and will withstand stress to approximately 1-1/2 times the maximum pressure resulting from an explosive incident.
4. Test Procedure. Test will be conducted at Milwaukee prior to shipping the ECC to Tooele Army Depot. After assembly, instrumentation (piezo electric crystal sensors) will be attached to the ECC outer surfaces for acoustic emission monitoring. Water will be pumped into the ECC and maintained at 250 psi for 12 hours.

*A copy of the complete test plan is available on request to Office of the Project Manager for Chemical Demilitarization and Installation Restoration, DRCPM-DRD-TM, Aberdeen Proving Ground, Md. 21010

SUMMARY TEST PLAN*

CAMDS 2-12

1. Name of Test. Hydrostatic Test No. 2.
2. Date. November 1975.
3. Test Objectives. To assure the Explosive Containment Cubicle (ECC) did not suffer structural damage during shipment from Milwaukee to Tooele Army Depot.
4. Test Procedures. The ECC will be installed and retested using the same procedures as for Hydrostatic Test No. 1.

E-23

*A copy of the complete test plan is available on request to Office of the Project Manager for Chemical Demilitarization and Installation Restoration, DRCPM-DDD-TM, Aberdeen Proving Ground, Md. 21010

SUMMARY TEST PLAN*

CAMDS 2-13

1. Name of Test. Ultrasonic Inspection of Welds.
2. Date. December 1975.
3. Test Objectives. To detect weld fatigue resulting from transportation and testing of the Explosive Containment Cubicle (ECC).
4. Test Procedures. The inspection will be performed in accordance with the procedures of NAVSHIP Report 0900-001-3010. This test will be performed after the second hydrostatic test. Acceptance levels will be as given in Appendix C, Table C-2 (page 137), Column 2 (3/4" to 1-1/2") of the American Welding Society (AWS) Publication.

*A copy of the complete test plan is available on request to Office of the Project Manager for Chemical Demilitarization and Installation Restoration, DRCPM-DRD-TM, Aberdeen Proving Ground, Md. 21010

SUMMARY TEST PLAN*

CAMDS 2-14

1. Name of Test. Air Lock and Ventilation Tests.
2. Date. April 1976
3. Test Objectives. Determine design integrity of Explosive Containment Cubicle (ECC) in actual operating environment prior to start of demil operations.
4. Test Procedures. Start ECC Filter System to place ECC housing and ECC under negative pressure. Operate ECC doors. Check air flow characteristics, pressure drops, heat loss through ventilation system.

*A copy of the complete test plan is available on request to Office of the Project Manager for Chemical Demilitarization and Installation Restoration, DRCPM-DRD-TM, Aberdeen Proving Ground, Md., 21010

SUMMARY TEST PLAN*

CAMDS 2-15

1. Name of Test. Final Gas Leak.
2. Date. April 1976.
3. Test Objective. To assure the Explosive Containment Cubicle (ECC) does not leak.
4. Test Procedures. Pressurize the ECC to 200 psi with a freon air mixture. Test all bolts, door seals and cubicle penetrations for leaks.

*A copy of the complete test plan is available on request to Office of the Project Manager for Chemical Demilitarization and Installation Restoration, DRCPM-DRD-TM, Aberdeen Proving Ground, Md. 21010

SUMMARY TEST PLAN*

CAMDS 2-16

1. Name of Test. Dynamic Test on ECC No. 2.
2. Date. April 1976.
3. Test Objectives. To determine if an Explosive Containment Cubicle (ECC) will retain the fragments and overpressure resulting from an explosive incident.
4. Test Procedures. A second ECC is being constructed specifically for this test. All tests conducted on ECC No. 1 except the airlock and ventilation test will be conducted on ECC No. 2 prior to this test. A 10.1 pound charge of Comp B4 explosive will be detonated in the cubicle, next to a container of detectable agent simulant. The effects of the detonation will be monitored. The cubicle will be checked for leaks and structural deformation. Ultrasonic and acoustic emission tests will be conducted after the detonation and results of the detonation have been documented.

*A copy of the complete test plan is available on request to Office of the Project Manager for Chemical Demilitarization and Installation Restoration, DRCPM-DRD-TM, Aberdeen Proving Ground, Md. 21010